CA2ON
EU 665
1988
P332
c.2

ISBN 0-7729-4015-0

PHYTOTOXICOLOGY INVESTIGATION IN THE VICINITY OF ETHYL CORPORATION, CORUNNA, ONTARIO, JUNE 24, 1987

AUGUST 1988

Environment Ontario

Jim Bradley
Minister

LEGISLATIVE LIBRARY OF ONTARIO
TORONTO
JAN 24 1989
RECEIVED

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

ISBN 0-7729-4015-0

CA2ON
FU665
1988
P333
c.2

Phytotoxicology Investigation in the Vicinity of Ethyl Corporation, Corunna, Ontario, June 24, 1987

Phytotoxicology Section
Air Resources Branch

Report No.: ARB - 205 - 87 - PHYTO
Author: D.S. Harper

c Queen's Printer for Ontario, 1988

Le Ministère de l'Environnement a appris que le rejet de plomb dans l'air par l'usine de Corunna de la Ethyl Corporation, les 17 et 22 juin 1987, aurait contaminé la végétation croissant sur des propriétés situées sous le vent de l'usine. En réponse à une demande d'enquête phytotoxicologique faite par M. Jack Sharma du bureau de Sarnia du Ministère, M. D.S. Harper a prélevé le 24 juin des échantillons du feuillage des arbres du secteur en vue de les analyser pour y déceler éventuellement la présence de plomb.

Trois échantillons du feuillage d'érables argentés ont été prélevés dans chacun de six sites se trouvant le long d'un transect linéaire, en direction sud, à partir de l'usine d'Ethyl, ainsi que le montre la carte ci-jointe. Les échantillons de feuillage ont été recueillis dans des sacs de plastique propres pour pouvoir être transportés jusqu'au laboratoire de la Section de phytotoxicologie, à Toronto. Tous les échantillons ont été séchés, broyés et envoyés dans des bouteilles de verre à la Direction des services de laboratoire du ministère de l'Environnement, à Rexdale. Ils devaient y être analysés en vue d'y déceler éventuellement six éléments métalliques, et notamment du plomb. Nous présentons dans le tableau en annexe les résultats de ces analyses.

Nous n'avons observé aucune progression dans les concentrations de plomb dans le transect qui partait de l'usine. Les concentrations très légèrement élevées dans les sites d'échantillonnage 3 et 5 étaient dues à la proximité de la route St. Clair et aux émanations des véhicules consommant de l'essence avec plomb. Par ailleurs, nous n'avons trouvé aucune progression discernable des cinq autres éléments dans le secteur.

On June 17, 1987, and subsequently on June 22, 1987, releases of lead to air from Ethyl Corporation's Corunna Plant were alleged to have contaminated vegetation growing on properties downwind of that company. In response to a request for a Phytotoxicology investigation, from Mr. Jack Sharma, Ministry of the Environment, Sarnia Office, Mr. D.S. Harper sampled tree foliage in the area for lead on June 24.

Triplicate samples of silver maple tree foliage were sampled at each of six sites along a transect running roughly south from the Ethyl plant as shown on the attached map of the area. The foliage samples were collected into clean, plastic bags for transport to the Phytotoxicology Section processing laboratory in Toronto. All samples were dried, ground and submitted in glass bottles to the Ministry of the Environment Laboratory Services Branch in Rexdale for analysis for six metallic elements including lead. The results of those analyses are presented in the attached Table.

No trends in lead concentrations were observed with distance from Ethyl Corporation. The very slightly elevated lead concentrations at sampling sites 3 and 5 were due the proximity of these sites to the St. Clair Parkway and vehicles burning leaded gasoline. Concentrations of none of the other five elements showed discernable trends with distance from Ethyl Corporation.

Results of Analysis of Silver Maple Foliage Samples* Collected in the Vicinity of Ethyl Corporation, June 24, 1987

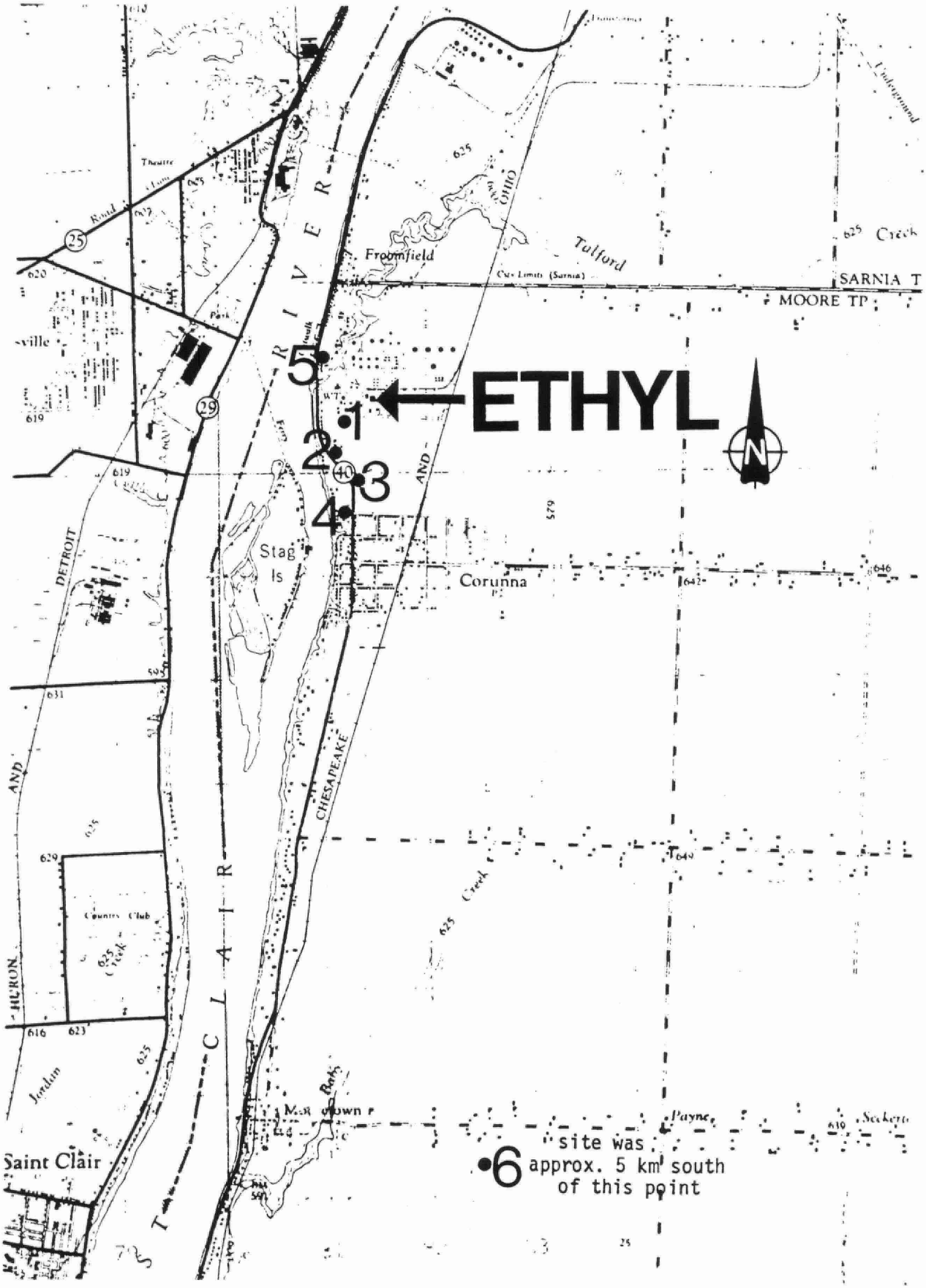
Sampling Site Number (& map reference no.)	Elemental Concentration by Metal (in ppm, dry weight)					
	Lead	Cadmium	Chromium	Copper	Nickel	Zinc
		**				
1	3	<0.1	<0.1	11	2	32
2	2	<0.1	<0.1	8	2	25
3	6	<0.1	<0.1	10	1	27
4	4	<0.1	<0.1	13	1	15
5	7	0.1	<0.1	8	1	40
6	<0.1	<0.1	<0.1	6	<0.1	37
Phytotoxicology Upper Limits of Normal ***	30	1	8	20	5	250

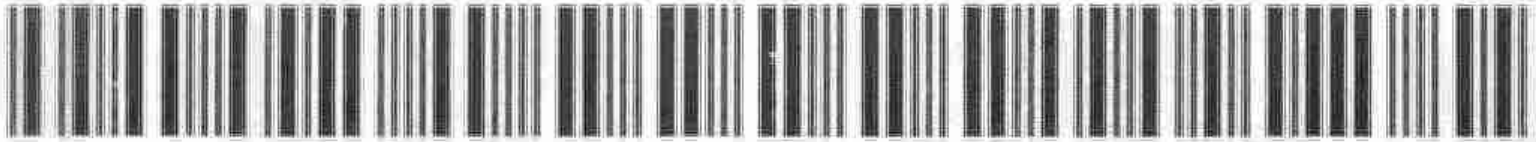
* values shown in the Table are the arithmetic means of the analytical results from the triplicate samples

** "<" denotes "less than"

*** Phytotoxicology "Upper Limits of Normal" are values derived for each element from background data bases representing areas of Ontario known to have been uncontaminated by point source emissions, by taking the means of these results and adding three standard deviations of those means. Values found in excess of these means are considered to be the result of emissions from point sources 99 times out of 100. These guidelines have been developed for both urban and rural areas. The more stringent rural ULN's are shown in the Table, even though the Sarnia/Corunna area might be more realistically considered urban (population greater than 10,000).

Map of the Vicinity of Ethyl Corporation, Corunna, showing the Locations of the Six Sites at which Silver Maple Tree Foliage was Sampled
June 24, 1987




9693600000924 3